

Cyclosalpa retracta, a new Salpoid from the coast of Japan.

BY

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The unique species here described is contained in the zoological collections of the Tokyo Imperial University. It was taken in the Suruga Bay by a dredge, that had been down to a depth of 700 hiro (about 550 fathoms). Unfortunately there is but a single specimen known. This, however, is in a good state of preservation, and so strikingly different is it in several particulars from any species of the group hitherto described that there can be no risk in basing an outline description on the one individual.

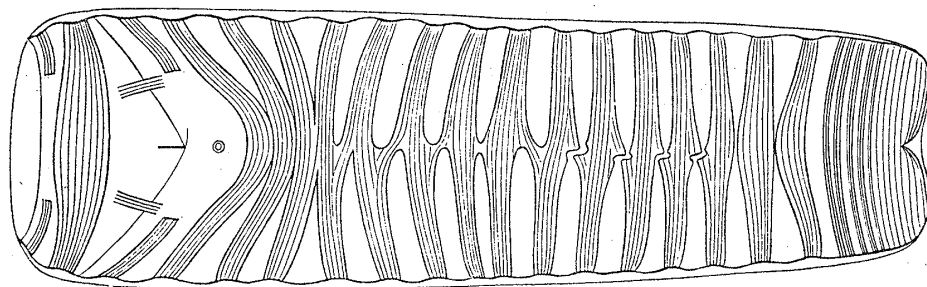


Fig. 1. *Cyclosalpa retracta*, dorsal view

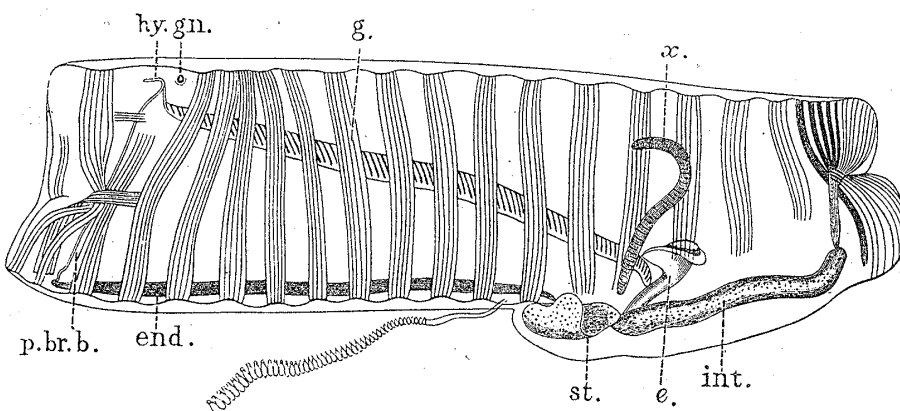


Fig. 2. *C. retracta*, lateral view

e. oesophagus, end. endostyle, g. gill, gn. ganglion, h. hypophysis, int. intestine, p. br. b. peribranchial band, st. stomach.

General Characters.—Body cylindrical, slightly smaller at posterior end; uniformity of outline broken only by a median prominence on the ventral side into which the digestive tract protrudes. Test thin and transparent. Length of animal 7.5 cm. Both orifices strictly terminal; lips of branchial not prominent; wall of atrial siphon thin, margin of orifice divided into dorsal and ventral lobes by lateral notches.

Musculature.—Body bands 16, rather strong, second to tenth inclusive not interrupted at any point, first of series interrupted by a wide interval dorsally; eleventh to sixteenth inclusive interrupted ventrally. General course of the bands parallel with one another, but second and third inclined backward somewhat on dorsal side, so that these with fourth nearly or quite in contact; intermuscular bridges connecting the bands on dorsal median line from about the fifth to the fourteenth; sixteenth band inclined forward on dorsal side. One continuous lip band, broader in dorsal lip, narrower in ventral where it divides into two and makes a sharp angle laterally. A pair of much smaller marginal bands in upper lip. A pair of short longitudinal bands in dorsal lip extending from broad lip-band nearly to dorsal terminations of first body bands; also a longitudinal band at each angle of the branchial orifice extending back to the second body band, and bending down into the ventral lip at its anterior end. About twelve delicate bands in dorsal half of atrial siphon, the first four or five larger; all but the first running together laterally to make a broader band on ventral side. About an equal number of siphonal filaments in ventral half of siphon, the first broader and extending up on to the dorsal surface.

Branchial organs.—"Gill" of the usual salpa type, reaching from the first body muscle to the thirteenth. Endostyle delicate, nearly straight, extending back to the interval between the eleventh and twelfth body bands. Hypophysis mouth forming a right angle, each arm of the angle being about two mm. long; dorsal tubercle not projecting greatly into the pharyngeal cavity. Peripharyngeal band delicate. Ganglion and eye in front of second body muscle from which they are about as distant as from the hypophysis mouth.

Intestinal Tract.—Esophagus opening large with a prominent margin, situated under the fourteenth body muscle band; the funnel-shaped esophagus extending forward and ventralward to enter the stomach, which is situated under the twelfth and thirteenth muscles. Stomach with a prominent lobe on left side somewhat compressed, the apex directed dorsalward. Intestine proper springing from the posterior margin of stomach near the entrance of the esophagus, running backward with slight upward curvature at the anus, to beyond the last body muscle. Intestine of nearly uniform diameter throughout. The whole digestive tract situated on the extreme ventral side of the body, in fact so close as to cause a bulging of the body wall in this region.

Proliferous Stolon.—Straight, directed forward, issuing from the body by a small pore a short distance in front of the stomach.

A peculiar structure, fig. 2, \times . concerning the nature of which I am quite in the dark, is clinging to the left side of the animal. This is uniformly cylindrical and flaccid. In the original condition it was about three and one half cm. long, and about two mm. thick. The proximal end is firmly embedded in the test to the extent of nearly one cm. the tip being but a short distance from the esophageal border of the stomach. A delicate strand seems to pass off from near the tip toward the intestine; but to have undertaken to make out the nature of this would have required more dissection of the specimen than seemed wise until more material is secured. Microscopic examination of this cylinder showed it to consist of a thin outer membrane constituting a long sac, apparently closed at both ends, this sac being filled with spherical cells of uniform size, seemingly not connected with the wall of the sac. These cells resemble sperm mother cells, but in view of the position of the organ, and especially of its presence in connection with an individual of the asexual generation, it can hardly be supposed to have any thing to do with the male reproductive apparatus of the species. For the present we must, I think, regard the puzzle as a foreign body of some sort.

Pending a more detailed study of the species upon a larger number of specimens, and especially upon specimens of the aggregate generation,

final judgement as to affinities can not be pronounced. In addition to the straight intestine, which is the most obvious feature allying it to *Cyclosalpa*, I have also depended to some extent for the assignment, on the information obtained by examining the zooids of the salpa chain carried by the parent. The young zooids are, however, still too immature to permit one to decide with certainty what the form of the intestine will be in the adult. Apparently, however, it is destined to become a wide loop something of the sort found in *C. affinis* and some other species of the genus. Whether or not the backward extension of the intestine instead of a forward extension as in other species of *Cyclosalpa* is a character sufficiently important to deserve being treated as of generic rank must be decided by future study. Special attention may will be called to the muscle bands. In number they exceed those of any other known *Salpa* excepting *S. tilesii-costata* where the solitary generation has eighteen to twenty bands. But the most interesting thing about the muscles is the fact that so many of the bands are continuous around the entire body of the animal. The species detracts considerably from the value of the distinction between the Doliolidae, and the Salpidae, implied by the terms cyclomyaria for the former, and hemimyaria for the latter. The bridging across from band to band on the dorsal side in this species recalls *Salpa hexagona*; but the same thing occurs to some extent in a few other species.

While thus calling attention to the resemblance of this *Salpa* to *Doliolum* in the continuity of the muscle bands, we may point out the further resemblance between the two from the character of the intestine in *C. retracta*. The relative position of the stomach and the direction of the intestine in *D. Ehrenbergii* are quite similar to the position and direction of the corresponding organs in the *C. retracta*. These similarities between isolated species of the two groups can, however, hardly be supposed to have great homological significance.

The specific name, *retracta*, has reference to the backward course of the intestine.

I cannot close this note without expressing my appreciation of the

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kindness, shown me, greater even than the spirit of fraternity among men of science might be expected to secure one, by the staff of the department of zoology of the Science College during my brief stay in Japan. I must thank Mr. S. Fujita in a special way for the figures illustrating this paper.

Tokyo, April 17, 1906.
